A single-center, cross-sectional prevalence of stress, anxiety, and depression in patients prior to elective coronary angiography

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Abstract

Aim: Coronary angiography is one of the definitive diagnostic tests for evaluating coronary artery disease. Patients undergoing this test suffer from psychological strains as well as life-threatening complications that cause many problems for patients. The aim of this study was to evaluate the level of stress, anxiety, and depression of patients prior to elective coronary angiography. Material and Method: This cross-sectional descriptive study was conducted on three hundred and sixty patients at Vali-E-Asr hospital in Fasa city, southwest of Iran. After selecting patients according to inclusion and exclusion criteria, the level of anxiety, stress and depression of patients was measured by Depression, Anxiety, and Stress Scale 21 (DASS-21). Data analysis was performed using SPSS software, version 19, through descriptive and inferential statistics. Results: The findings of this study showed that 83.88% of patients have stress, 65.27% anxiety, and 18.61% depression. Females had higher levels of anxiety than males, and this difference was statistically significant (P<0.001). Discussion: The results of this study revealed that the patient candidates for coronary angiography have higher levels of stress and anxiety. Appropriate nursing interventions are required to reduce psychological problems of these patients prior to coronary angiography.

Keywords

Stress; Anxiety; Depression; Coronary Angiography; Patient

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Introduction

Cardiovascular diseases are the main leading cause of death worldwide and are responsible for 17 million deaths each year [1]. According to the World Health Organization (WHO), 22% of causes of death in the world and 35% of mortality are due to cardiovascular diseases [2, 3]. According to the published statistics, annually this disease kills more than 110,000 people in the UK [4]. Today, the prevalence of cardiovascular diseases, including coronary heart disease, is significantly increased, and as a result, newer diagnostic methods have been developed. One of these methods is coronary angiography, which is a standard and definite procedure used for the diagnosis of coronary artery disease [5, 6]. This procedure is performed by inserting a catheter through the femoral or brachial artery and placing the catheter tip in the hole of the right and left coronary arteries. Radiographic dye is then injected into the arteries, and fluoroscopy images of the arteries are taken [7]. Approximately one million cases of angiography are annually performed in USA [8, 9]. In our country, due to the high incidence of coronary heart disease, coronary angiography is performed very often in many different centers [10].

Following the use of diagnostic tests such as coronary angiography, patients are exposed to psychological problems such as stress and anxiety for various reasons. These reasons include fear of the unknown, fear of the test result, fear of surgery and fear of complications in the diagnostic testing. Moreover, the patient is awake and alert during the procedure, and this consciousness causes an increase in the severity of the problems [5, 9]. Coronary angiography is an invasive procedure that is causing tension in patients [7]. When patients are admitted for coronary angiography, the psychological problems are increased as a result of the psychological and physiological activity that they experience during the process [11, 12, 13]. If the amount of the psychological problems is greater than usual, many physical and mental stresses occur and can have significant effects on many systems of the body, especially the cardiovascular system. In addition, higher levels of psychological problems put the patients at serious risks in the catheterization laboratory [6, 14, 15].

Review of the literature conducted in this field shows that the main focus of most studies is on only one aspect of the psychological problems of coronary angiography patients, and few studies exist in the assessment of comprehensive psychological status of these patients (stress, anxiety, and depression) [5, 7, 9, 10]. Due to the lack of studies about the level of stress, anxiety and depression in patients undergoing coronary angiography, the psychological status of the patients must first be determined before carrying out any intervention. With regard to these facts, the aim of this study was the assessment of the level of stress, anxiety, and depression in patients undergoing coronary angiography.

Material and Method

This is a cross-sectional study conducted during 2015-2016 at Vali-E-Asr hospital in Fasa city, southwest of Iran. In this period, all patients who had inclusion criteria and were willing to participate in the study were selected and examined. Exclusion criteria included age less than 25 years or more than 75 years, previous history of coronary angiography, unconsciousness, having known mental health disorders and emergency coronary angiography.

After selection of samples according to purposeful sampling and based on inclusion and exclusion criteria and obtaining informed consent, their level of stress, anxiety, and depression was measured after admission to the ward and between 2-4 hours before the procedure by the researcher through interviews with them. To collect the data in this study, we used a demographic questionnaire (on age, sex, height, weight, occupation, marital status, history of hospitalization) and a 21-item questionnaire to measure stress, anxiety, and depression (DASS -21).

The latter questionnaire was developed first by Lovibond in 1995 [16] and has three sections of anxiety, stress, and depression. This questionnaire is a Lickert type scale and has four options (never, low, medium, and high). The minimum score for each question is zero, and the maximum score is 3. After summing the scores for the seven questions from each section, the scores of 0-4 indicate normality, 5-11 moderate and 12-21 severe disorder. This tool can be used to determine each of the three cases of stress, anxiety, and depression [16].

This instrument is a standardized scale the validity of which has been confirmed in many studies. In Iran, the reliability of this scale in a sample of 400 subjects from the general population of Mashhad has been reported [17]. Validity and reliability of this scale have been tested and approved by Aghebati [18], Moradipanah et al. [19] and Mahmoudi et al. [20] in various studies. Lovibond et al. (1995) also reported a high correlation with Beck anxiety and depression Inventory [21].

In this study, Cronbach's alpha was used to determine the reliability of the DASS-21. Using the results of the scale on the first 30 patients participating in the study, the internal consistency of the scale was assessed by Cronbach's alpha, being 0.87, 0.84 and 0.80 for stress, anxiety, and depression, respectively.

After data collection, data analysis was performed in SPSS, version 19, using descriptive (Mean and frequency) and inferential statistics (Chi-square test and correlation coefficient). 0.05 was considered as the level of significance.

Results

Of three hundred and sixty (n=360) patients who participated in this study, 224 (62.22%) were male and 136 (37.78%) were female. The mean age of the patients was 51.13±8.64 years. The most frequent level of education was just the ability to read and write (46.11%) and the lowest frequencies were related to associate degree (4.16%), respectively. In terms of marital status, 320 (88.88%) patients were married. 284 (78.88%) patients had a history of hospitalization (Table 1).

The results of this study showed that 302 (83.88%) patients had stress (56.94% moderate stress and 26.94% severe stress), 235 (65.27%) had anxiety (38.61% moderate anxiety and 26.66% severe anxiety), and 67 (18.61%) had depression (Table 2).

In determining the relationship between demographic variables and levels of stress, anxiety, and depression of coronary angiography patients using Chi-square test, we found that the level of anxiety and stress of patients is statistically significant as to gender ($P<0.001$).

There was a statistically significant difference between the marital status of patients and their stress levels (P<0.001). The highest and the lowest levels of stress and anxiety were in housekeepers and retired persons, respectively. Also, between the level of stress and anxiety of patients, statistically significant differences were found (P<0.001).

Table 1. Demographic data

Background characteristics		n	%
Gender	Male	224	62.22
	Female	136	37.78
Marital status	Single	20	5.55
	Married	320	88.88
	Widow	14	3.88
	Divorced	6	1.66
Education	Illiterate	42	11.66
	Writing & Reading	166	46.11
	Guidance school	58	16.11
	Diploma	63	17.5
	Associate degree	16	4.44
	Bachelor's	15	4.16
Job	Unemployed	16	4.44
	Free	53	14.72
	Worker	56	15.55
	Employee	47	13.05
	Retired	68	18.89
	Housewife	120	33.33
History of hospitalization	Yes	284	78.88
	No	76	21.12

Discussion

The results of this study showed that 83.88%, 65.27% and 18.6% of the patients had stress, anxiety, and depression, respectively. The majority of patients who participated in this study had increased level of stress. These findings indicate that patients admitted to an invasive coronary angiography have higher levels of stress. Rahimi et al. in their study on hemodialysis patients showed that a large percentage of hemodialysis patients had moderately severe levels of stress, and due to chronic renal disease and dialysis procedures, they will experience a high degree of psychological tension [22]. Many studies have shown that disease, hospitalization, complicated medical care, and diagnostic tools are stressful experiences for patients and this makes them vulnerable to various stressors [23]. The most common factors associated with patients' stress levels are the prior experience of angiography, pain, anxiety, unfamiliar environment, and fear of angiography [10]. Moradipanah et al. in their study have reported increased stress levels of patients undergoing coronary angiography [19]. When stressors such as pain or anxiety or a combination of both occur in patients, mental and physical responses may appear as determined by an increase in the heart rate, blood pressure and cardiac output [8, 24, 25].

The study also found that 65.27% of patients awaiting coronary angiography are anxious. This result is consistent with those obtained by Ganji et al. [5], Zolfagari et al. [26], Ruffiningo et al. [15], Hamel et al. [7] and Uzun et al. [9], indicating that the coronary angiography procedure causes anxiety in many patients. Conducted research in this field shows that in more than 82 percent of the patients who have undergone this procedure, fear and anxiety occurs due to performing this procedure and the results of diagnosis. Anxiety before angiography is an inevitable phenomenon, but in the case that the increase in anxiety is more than the usual tension, many physical and mental effects occur to the individual; there are especially considerable effects on the heart.

The results showed that 18.61% of participants in this study had depression. Moradipanah et al. in his study on patients undergoing coronary angiography showed that these patients suffer from depression [19]. Depressive disorders often occur following a stressful life event [1]. If physical illness affects the personal lives of individuals, psychological issues are more likely to develop into depression. This probability in all physical illnesses associated with stress is intensified. Many cardiovascular patients may show moderate to severe depression that is a natural reaction and it is possible that these may persist for the days, weeks and even months after discharge [27].

In this study woman showed higher levels of anxiety than men. The results obtained from this study are consistent with those of Ganji et.al [5], Bytzer et.al [28], Uzun et.al [9] and Luck et.al [29], confirming that women experience higher levels of anxiety than men.

Conclusion

The results of this study showed that patients awaiting coronary angiography have higher levels of psychological problems. Since many studies highlighted that higher levels of stress, anxiety, and depression are dangerous for these patients, effective nursing interventions such as patient education, counseling, and encouragement to express feelings and concerns in order to reduce the symptoms and complications and length of hospital stay are necessary.

Table 2. Depression, anxiety, and stress of patients

Variable Gender	Stress			Anxiety			Depression		
	N	M	S	N	M	S	N	M	S
Male	43(19.19)	136(60.71)	45(20.1)	93(41.51)	76(33.92)	55(24.55)	181(80.80)	39(17.41)	4(1.78)
Female	15(11.02)	69(50.73)	52(28.25)	32(23.5)	63(46.32)	41(30.14)	112(82.35)	22(16.17)	2(1.47)
Total	58(16.11)	205(56.94)	97(26.94)	125(34.72)	139(38.61)	96(26.66)	293(81.38)	61(16.94)	6(1.67)
P Value	0.001			0.001			> 0.05		

*N: Normal, M: Moderate, S: Severe

Limitations

Since the use of a questionnaire to measure the level of stress, anxiety and depression had its associated limitations; it is recommended that in future studies, along with the questionnaire, other tools such as hemodynamic status and hormonal parameters should also be measured. Recognition of stress, anxiety and depression in patients awaiting coronary angiography will help nurses and other members of the care team to minimize this problem in a timely and effective use of pharmacological and non-pharmacological approaches.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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